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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,640	05/12/2005	Tetsuya Kamihara	040302-0486	1643

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EXAMINER	
RADEMAKER, CLAIRE L	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,640	KAMIHARA, TETSUYA	
	Examiner	Art Unit	
	CLAIRE L. RADEMAKER	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/12/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation "setting an initial value of the integration value to be calculated in case of controlling the open/close valve in the open state lower as the temperature of the fuel cell stack when the open/close valve is operated to the closed state from the open state is higher" (claim 14) is indefinite because it is unclear exactly what value is being set and with regard to what property/properties or conditions the value is being set. For Examination purposes, this limitation has been interpreted as meaning to that the controller is set to keep the fuel cell system operating at an optimal temperature with optimal flow rates (integration values).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-11 rejected under 35 U.S.C. 102(b) as being anticipated by Andreoli et al. (EP 0-741-428).

With regard to claims 1, 6, & 11, Andreoli et al. discloses a fuel cell system (col. 3, lines 37-42) comprising:

A fuel cell stack (col. 3, lines 37-42) having a fuel electrode and an oxidant electrode provided facing each other with an electrolyte membrane inbetween (col. 3, lines 42-46);

A gas supply unit which supplies a fuel gas to the fuel electrode (col. 3, lines 47-52) and which supplies an oxidant gas to the oxidant electrode (col. 4, lines 41-47) to cause the fuel cell stack to generate power;

A circulation unit (23, col. 4, lines 20-28; Figure 1) having a circulation passage to return an excess fuel gas, discharged from the fuel cell stack to a fuel gas inlet port of the fuel cell stack (13, col. 4, lines 20-28; Figure 1);

A gas discharge unit (col. 4, lines 15-19) having an open/close valve (22, col. 4, lines 15-19; Figure 1) which discharges a gas present on the fuel electrode from the circulation passage (col. 4, lines 15-19); and

A control unit (15, col. 4, lines 7-11 & 18-19, & col. 7, lines 35-46) which controls open/close valves (col. 4, lines 7-11 & 18-19, & col. 7, lines 35-46).

It is noted that the product-by limitations of claims 1, 6, & 11 have not been given patentable weight because it has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim (MPEP 2114).

With regard to claims 2-4 & 7-9, it has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim (MPEP 2114).

With regard to claims 5 & 10, Andreoli et al. discloses that the fuel cell system further comprises:

A coolant medium supply unit which supplies a coolant medium to the fuel cell stack (col. 1, lines 33-43 & col. 5, lines 23-29; Figure 1); and

A coolant medium temperature detecting unit which detects a temperature of the coolant medium (col. 2, lines 32-36 & col. 5, line 53 - col. 6, line 2).

It is noted that the product-by limitations of claims 5 & 10 have not been given patentable weight because it has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim (MPEP 2114).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson et al. (US 2004/0161657) in view of Meyer et al. (US 2003/0072978).

With regard to claims 12-14, Simpson et al. teaches a method to control a fuel cell system (10, paragraph [0019]; Figure 1), where the fuel cell system comprises a fuel cell stack (12, paragraph [0019]; Figure 1) having a fuel electrode and an oxidant electrode provided facing each other with an electrolyte membrane in between (paragraph [0002]), a gas supply unit (21 & 31, paragraph [0020]; Figure 1) which supplies a fuel gas to the fuel electrode and which supplies an oxidant gas to the oxidant electrode (paragraph [0020]; Figure 1) to cause the fuel cell stack to generate power, a circulation unit (60, paragraphs [0019] & [0025]; Figure 1) having a circulation passage to return an excess fuel gas, discharged from the fuel cell stack, to a fuel gas inlet port of the fuel cell stack (paragraphs [0019] & [0025]; Figure 1), and a gas discharge unit (Figure 1) having an open/close valve (72, paragraph [0026]; Figure 1) which discharges a gas present on the fuel electrode from the circulation passage paragraph [0026]; Figure 1, and where the method to control the fuel cell system comprises the steps of:

Calculating an integration value (flow rate) resulting from integration of a value per unit time concerning a gas to be supplied to the fuel electrode (paragraph [0033]) when the open/close valve is set in a closed state (paragraph [0033]);

Controlling the open/close valve in an open state when the integration value (flow rate) becomes equal to or greater than an accumulation threshold value / predetermined value (paragraph [0033]);

Determining an integration value (flow rate) from the open/close valve (paragraph [0072]) according to power on which the fuel cell is running when the open/close valve is set in an open state (paragraph [0026]),

but fails to teach the concept of determining when to close an open/close valve according a gas flow rate or teach the concept of keeping the fuel cell system operating at an optimal temperature with optimal integration values (flow rates).

Meyer et al. teaches the concept of determining when to close an open/close valve according to a flow gas volume or purge time (paragraph [0026]). While Meyer et al. fails to teach the concept of closing an open/close valve according to flow rate, it would have been obvious to one of ordinary skill in the art at the time of the invention to determine when to close an open/close valve according to both flow gas volume and time (aka flow rate).

Furthermore, while modified Simpson et al. fails to specifically state the concept of keeping the fuel cell system operating at an optimal temperature with optimal integration values (flow rates), one of ordinary skill in the art at the time of the invention would understand that it would be obvious to set the controller to keep the fuel cell system operating at an optimal temperature with optimal integration values (flow rates) in order to maximize fuel cell efficiency and life.

Furthermore, while modified Simpson et al. fails to teach the concept of having the open/close valve change to a closed state when the integration value (flow rate) becomes equal to or greater than a discharge threshold value, it would have been obvious to one of ordinary skill in the art to have the open/close valve change to a closed state when the integration value (flow rate) becomes equal to or greater than a discharge threshold value because the open/close valve was changed to an open state when an integration value (flow rate) concerning a gas to be supplied to the fuel electrode became equal to or greater than an accumulation threshold value / predetermined value. Therefore, it would be obvious to have the open/close valve be change to an open state and be change to a closed state according to threshold values.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAIRE L. RADEMAKER whose telephone number is (571)272-9809. The examiner can normally be reached on Monday - Friday, 8:00AM - 4:30PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. L. R./
Examiner, Art Unit 1795

/Alexa D. Neckel/
Supervisory Patent Examiner, Art Unit 1795